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## APPENDIX.

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### REPORT ON VACCINATION,

Read at the Annual Meeting of the MASSACHUSETTS MEDICAL SOCIETY. June 1, 1808.

*THE Committee appointed on the 3d of February 1808, by the Counsellors of the Massachusetts Medical Society "to inquire into the present state of the evidence respecting the prophylactic power of the cowpock, and to report such measures as they may find to be expedient for establishing the practice on a safe foundation," beg leave to offer the following report ;*

ON examination of the principal writers for and against vaccination has fully confirmed, in the opinion of the committee, the statement originally made by Dr. Jenner, which was in substance as follows, viz. "that the animal economy is under precisely the same laws with respect to the action of vaccine and variolous virus, and that both of them are by inoculation preventives of the smallpox ; but that the advantages are greatly in favour of vaccine inoculation, because it is equally safe at all ages and in every season, and does not occasion confinement,—because it neither diffuses contagion nor excites scrophula, and because it is free from the danger attending the inoculated smallpox, which still proves fatal in one case out of two hundred and fifty."

To quote authorities, or to adduce the experiments which have been made, in support of these opinions must be needless. The experiments could scarcely be numbered, and for authorities we have more than nineteen twentieths of all the practitioners of medicine, who have investigated the subject. Let us appeal only to the test proposed by one of the most able opponents of the practice of vaccination ; this is Mr. Goldson, an English surgeon, who has published "cases of smallpox subsequent to

vaccination." Mr. Goldson makes the following remark ; " The full extent of the powers of vaccination can only be ascertained when the smallpox shall again become the prevailing epidemic :— when the state of the atmosphere shall again be so far variolated, that seclusion can be of little avail ; then will be the time to prove, how far the security vaccination gives, will extend." To which Dr. Willan, in his treatise on vaccine inoculation applies the following observations ; " This crisis appears to have taken place in the metropolis last year, when the smallpox was more extensively diffused, and proved more fatal than it had been in any of the four preceding years. All persons resident in or near London, who had been vaccinated since the beginning of 1799, but especially the children of the poor, must have had frequent intercourse with variolous patients during the time of the epidemic. The primary series of vaccine inoculations were thus tried in the severest manner possible, yet the subjects of them, to the amount of many thousands, or even tens of thousands, remained proof against the contagion.

" Whilst we acknowledge that some, who had been vaccinated in the preceding years, took the smallpox at this period, we have reason to congratulate ourselves that the number was so small, and that so few mistakes had been committed in a mode of practice entirely new. Mr. Goldson himself allows, ' It was not extraordinary such cases should occur in the early stages of its introduction.'—' Indeed, prior to the nature of the disease being sufficiently understood,' he says, after Dr. Jenner, ' many practitioners took up the lancet, without ever having seen the vaccine pustule.'"

The high interest which this discovery excited in this country at the time of its annunciation, and the evidence, which was immediately offered by Dr. Jenner and his coadjutors, did, at a very early period, engage the attention of almost every individual among us in the medical profession ; and that evidence was so perfectly satisfactory to the public, that a formal investigation of the subject by this society, at that period, was altogether unnecessary.

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The most important laws of the vaccine disease were stated by Dr. Jenner, when he introduced the knowledge of it to the world. The principles he laid down and the limitations he pointed out are sufficient to guide us in the great majority of cases. But it was not possible that he should at the outset have been minute in noticing every variety of circumstance attending vaccination. Dr. Jenner foresaw that many errors would be committed and many difficulties would arise, if this practice should not be pursued with the utmost prudence and circumspection. Such errors and difficulties would necessarily affect the reputation of the practice, of which the rules were contravened in the production of them.

Difficulties have arisen, and in reporting the present state of evidence on this subject, it is proper and may be useful to state that the utility of vaccination has been much more contested within the last five years, than during the five years, which preceded them. The committee have examined the evidence offered against vaccination and have endeavoured carefully to estimate its importance; the result of their examination they will state in a manner as concise as shall be consistent with perspicuity.

From the evidence which has been furnished to the public, it appears unquestionably that very many persons, who have been supposed to be secured from smallpox by vaccination, have been subsequently affected with smallpox in a degree more or less severe; although the occurrence of that disease under such circumstances has very rarely been followed by death. From the number of instances of this sort which have already been made public there is reason to believe that very many similar ones will occur, unless prevented by seasonable caution. To whatever cause these events may be attributed, it is not to be presumed that we shall be exempt from similar misfortunes in this country, unless we provide against them; and as they would probably take place during the general prevalence of smallpox among us, and would therefore happen many of them at the same moment, they would be peculiarly distressing.

The committee are happy to say that all real evils of this sort are capable of being obviated ; and that if this is not true in every case, the exceptions are at least as rare, as those which happen in the practice of variolous inoculation.

It appears that a large proportion of those, who have had the smallpox after supposed vaccination, were inoculated by persons not of the medical profession, or by those in it, who had not acquired a knowledge of the vaccine disease. In other countries, as in this, persons out of the medical profession have practised vaccination, many of them from motives of benevolence, although some have been influenced by those of a very different character. Whatever motives may have influenced them, the practice of such persons should be discountenanced ; for although in perfect cases the character of the cowpock is so decidedly marked, that a very little experience renders it familiar, yet many equivocal cases occur, in which a nice discrimination and a habit of comparing the appearances of cutaneous diseases are found requisite.

It is however true that all the cases of failure cannot be referred to ignorance in the inoculators ; and that the smallpox has appeared with a character more or less strongly marked even in those, who have been vaccinated by regular practitioners of medicine ; and indeed by practitioners who have had much experience and been well-informed on the subject of cowpock. In support of this statement the committee refer among other authorities to the following, viz ; Willan on Vaccine Inoculation ; Medical and Physical Journal, vol. 14, pages 5, 6, 21, 143, 308, and 407 ; Medical and Chirurgical Review, vol. 13, in the miscellaneous part, pages xcii, cxv, and cxvii. ; vol. 14, miscellaneous, pages lxxxv, cxxxiv, and cxxxv. Many other references might be given to other pages in the same and also to other works. The committee have selected the following cases, which are not however more remarkable than many others.

*“ A Case of Smallpox after Vaccination ; communicated by Mr. Blair, Surgeon of the Lock Hospital, &c.*

“ On May 7, 1803, I inoculated a child, named Alice Gorthorpe, with the vaccine fluid. The disease made its usual pro-

gress, and left a cicatrix on each arm, as may be seen at present. On the eighth day after inoculation, I took matter from this child and vaccinated several others.

“ On Monday, June 3, 1805, the mother of the child, residing at No. 25, Tower-street, Seven Dials, came to my house, and shewed me the patient covered with a distinct variolous eruption, small in size, but fairly matured. I sent her immediately to Dr. Adams, (who succeeded Dr. Woodville at the Inoculation Hospital) to prevent my giving an erroneous opinion respecting her case; he agreed with me that it was certainly the small-pox; and that this instance must be added to the few others which have occurred, of the variolous infection taking place subsequent to complete vaccination.

“ I have only to add, that three years ago I vaccinated another child of the same parent, and a third on the 21st of May last; both of which, with nine more who had been inoculated in the same family, escaped the smallpox on this occasion; and, what is deserving of notice, the infant whom I vaccinated on the 21st of last month (Thomas Gorthorpe) had slept in the same bed with his sister during the whole progress of her recent disease.

“ *Great Russell-street, Bloomsbury, June 6, 1805.*”

[Med. & Phys. Jour. vol. 14, p. 21.

*Extracts from a paper by Mr. Ring.*

“ Two other cases of the smallpox have occurred since my last communication, in patients vaccinated by me. One of them is a child of Mr. Pearse in Great York Mews, Baker-street, who was inoculated four years ago, with matter taken on the tenth day. I have long avoided to take matter at so late a period; but at the same time must acknowledge, that in this case I frequently saw the pustule, which appeared perfect, and to go through its regular course.

“ The subject of the other case is a child of Mr. Stokes, No. 12, Orange-court, Swallow-street, whom I inoculated five years ago, at a time when it was not thought of much consequence at what period matter was taken, provided a pustule, resembling a vac-

cine pustule, took place. Such a pustule took place in the present instance, and afforded matter for a considerable number of other successful inoculations; and those who were thus inoculated, have resisted the infection of the smallpox. I cannot, therefore, but consider it as having been a genuine case. The smallpox, in this instance and the former, as well as others, is so very benign for the natural sort, that I conclude it is modified and mitigated, though not totally prevented, by the preceding vaccination.”

[Ibid. p. 143.

*Extracts from the Minutes of the Original Vaccine Pock Institution in London.*

“ June 10, 1806. Anna Maber (No. 33, on Dr. Nihell’s list), now ten years of age, attended the institution, with an eruption supposed to be smallpox. She was vaccinated at this institution four years ago, and there is a very distinct scar on the left arm. She began to be ill eleven days ago, and in three days a rash appeared. On the fourth day, an eruption followed, with abatement of the fever, and the rash disappeared. The eruptions continued to come out for some days, and the fever went entirely off. The eruptions are still out, but in a dried or scabbed state, and amount in number to some hundreds: they are more or less on the skin of every part of the body. The mother of the child says, that most of them did contain yellow matter: a few of the scabs are now the size of ordinary smallpox, but most of them not so large.

“ At the same time attended Mary Maber, eight years old (No. 34 on Dr. Nihell’s list); she was also inoculated at this institution at the same time with her sister above: a distinct scar remains on the arm inoculated. She sickened the day after her sister with similar symptoms, and in four days eruptions appeared, about twenty in number, the illness at the same time abating. The eruptions were the same in size and appearance as in the other.

“ No doubt was entertained by the gentlemen present of these being cases of smallpox, which they appear to have taken from William Patterson, a child inoculated for the smallpox twenty-

two days ago, who sickened at the usual period of nine days, and had the smallpox in the ordinary way, with a copious eruption. These three children all lived together in the same room, while Patterson was under the smallpox.

“ Both Anna and Mary Mabers, according to the mother’s account, underwent the chickenpox before vaccination, and both have had the measles since vaccination.

“ The register contains the following report of these cases during vaccination.

“ No. 33, Anna Mabers, five years old, inoculated April 8, 1800, with eighth day matter, from Mary Burrell, No. 24 ; one puncture in left arm.

“ 8th day. One well-formed pustule—headach and fever on the seventh day, but now better.

“ 11th day. Pustule looks well, with broad red margin—has had headach and fever since the last report.

“ 13th day. Pustule black—beginning to dry up : very well since last report.

“ No. 34. Mary Mabers, three years old, inoculated from same patient and same day with the above : one puncture in left arm.

“ 3d day. Taken ; no illness.

“ 8th day. A well-formed circular pustule, with red margin.

“ 11th day. Fine pustule, with great inflammation in the arm—has been poorly since last report.

“ 13th day. Pustule black and drying.

“ 14th day. Well.

“ June 17. As an additional proof that the two Mabers were duly affected with cowpox, they were at the time selected for the inoculation of five children in one family ; viz. Mr. Parker’s of Fleet-street, who also went through the cowpox, as was conceived, in a distinct manner, and were subsequently inoculated for smallpox by Dr. Pearson without effect. Farther ; the two Mabers were inoculated with eighth day vaccine matter, as above stated, from Burrell, who was among the number of patients inoculated by this institution for smallpox after vaccination, and



exposed to variolous infection at the smallpox hospital two years ago, without effect. In looking over Burrell's case, it appears that he took chickenpox five months after vaccination, and yet was found insusceptible of smallpox, contrary to Mr. Goldson's suggestion." [Med. & Chirur. Review, vol. 13, p. cxv.

" May 8, 1807. Dr. Pearson reported that Dr. H—— had called upon him to communicate the following case of failure in the instance of his own child.—About five years ago the subject was inoculated from a person in the cowpock selected by Mr. K. of the Army Board and approved by Dr. B——, and in consequence the most distinct vaccinepock affection was produced. A few weeks ago it was thought proper to test the patient by inoculating it with variolous matter obtained from the smallpox hospital. This inoculation has produced the most distinct smallpox disorder, the eruptions being decidedly those of the smallpox, of which there are about forty large and fully suppured, besides a number of small ones not suppured. Mr. Bowen of Harrow and others of the faculty have seen this child in the smallpox. [Ibid. vol. 14, p. cxxxv.

" Oct. 6, 1807. Mr. Gemmell, surgeon apothecary, Princes-street, Drury-lane, attended to give information respecting some cases of failure of cowpock.

" 1st. In the family of Mr. Thorn, an upholsterer, Bear-yard, Lincoln's Inn Fields: one of his children was inoculated at Pancras hospital about three years ago; about nine weeks afterwards, Mr. Gemmell attended the same child in the smallpox, which was very distinct and full, and unquestionably smallpox.

" 2d case was in the family of one Weaver, 35, Stanhope-street, Clare-market. (See the particulars of this case below.)

" The 3d case is now in the scabbing state of smallpox, at No. 14, Banner's court, Drury-lane. This child had been vaccinated at the smallpox hospital.

" Oct. 13. Ann Weaver attended this day with her son, William Weaver, nearly six years of age, whose case is mentioned above by Mr. Gemmell, (No. 2.) She says he was inoculated

for cowpox by Mr. Wachsel, at the smallpox hospital, about three years and a half ago : the scars are visible, but faint. The case was considered by Mr. Wachsel at the time to be complete, and several other patients were inoculated from it. He was re-inoculated, however, for cowpox about four or five months after, because the mother was dissatisfied, conceiving there ought to have been eruptions. This second inoculation produced a sore arm for several weeks.

“ Three months ago this boy was taken ill of fever, followed by eruptions, which were seen and declared to be smallpox, of the confluent kind, by Mr. Wachsel, Mr. Mainwaring, Mr. Sutton, Mr. Lawrence, Dr. Moseley, and others. This boy had communicated a short time before his illness with persons in the neighbourhood labouring under smallpox.

“ Mary, the sister of the above, who had been vaccinated by Mr. Wachsel, fell ill five weeks ago, and had about twelve eruptions, the scabs of some of which remain at this time. Other children in the adjoining houses have since fallen ill of smallpox.

“ Oct. 26. A note was received from Mr. Gemmell, mentioning the case of a child of Moore, a taylor, residing at No. 17, Great Wild-street, Lincoln's Inn Fields, then lying dangerously ill of smallpox after vaccination. In consequence of this information, a governor of the institution made inquiry the following day into the circumstances of the case. He reported, that he found the child lying dead of confluent smallpox, which had proved fatal on the twelfth day. The father said the child had been vaccinated two years before at Dundee, by Dr. Crichton of that place, who had declared the progress of the vaccine affection to be perfectly regular, and had in consequence taken matter from it to inoculate another child of the name of Scott. A distinct scar remained on the arm, and was visible at the time of the child's death. It was seen in the smallpox by Dr. Haworth, Mr. Gemmell, and several other gentlemen.

“ Nov. 6. Dr. Pearson reported, that he had visited a child of the name of Beasley, between three and four years of age, residing at No. 49, Upper Rathbone-place, who was just recovering

from smallpox, so severe as to have been in considerable danger. The eruption was universal, but distinct, and the pustules large and perfectly characterized. The eruption was now in the tenth day, and had not yet completely matured on the extremities. This child was vaccinated two years and ten months ago, viz. in January 1805, by Mr. Griffiths, of St. George's Hospital, and went through the disease to his satisfaction. Distinct scars remain on the inoculated parts. It is worthy of remark, that the cicatrices were quite free from pustules, although almost every other part of the skin was covered with them. The same thing has been observed in other cases.

“ Dr. Clutterbuck this day reported, that he had seen, two days ago, the child of Mr. Stiles, No. 7, Lamb's Buildings, Bunhill-row, then lying dead of smallpox. The disease was of the most malignant character, the pustules in general remaining flat and empty, interspersed during life with numerous purple spots. They were confluent only about the face. Many vesicles containing bloody serum were scattered over the skin.

“ This child had been vaccinated at the Golden-lane Jennerian station, by Mr. Lewis Leese, surgeon, and was registered as having gone regularly through the disease. The scar on the inoculated part was perfect.

“ Nov. 24, Robert Purdy, of 45, Upper Rathbone-place, attended the institution this day with his daughter, Sarah Purdy, aged four years and two months. This child has now an eruption of pustules amounting to several hundred, pretty generally diffused over the whole body, and which first made their appearance five or six days ago, after three or four days illness, with fever. The pustules on the face are now nearly in a state of maturation: those on the extremities are less forward. The gentlemen present, five in number, are unanimously of opinion that it is smallpox.

“ The father says, that the child was vaccinated by Mr. Ad-dington, of Spital-square, four years ago next January, at the Jennerian station in that neighbourhood, and went through the affection regularly. There is a distinct scar on each arm from vaccination.



“ A younger child in the same family has just gone through the smallpox, having been inoculated three weeks ago at the smallpox hospital. The smallpox has been also prevalent in the neighbourhood for several weeks past.”

[Ibid. vol. 15, p. cxxv.

Cases like these warrant hesitation and have in the minds of many excited serious doubts respecting the utility of vaccination.

It should however be noted that in most of the cases, where the vaccine disease has exhibited its proper characters, the subsequent variolous affection is evidently modified and rendered much more mild by the vaccination. In short where the smallpox has not been prevented by the vaccine pock, it has been disarmed of its terrors.

But the advantages of vaccination are to be determined by a comparison of this practice with that of inoculation for smallpox.

The advantages of variolous inoculation were these ; first, that the disease produced by it was very much more mild and less mortal, than when the same disease was produced by casual contagion ; and secondly, that the disease having been once produced, by whatever means, it will not occur again in the same subject. Both these laws are generally so true that they have long ceased to be controverted. But to them both there do, although rarely, occur exceptions. In some cases the smallpox produced by inoculation is very severe and even mortal. Likewise in some cases those who have undergone that disease, whether in one way or the other, have subsequently suffered from the same again in a greater or less degree. It is observed in almost every smallpox hospital, that the nurses are subject to variolous pustules especially in those parts, which have been in contact with the pustules of others. In these cases the disease has sometimes been so severe as to occasion symptoms of irritation, or secondary fever. But other cases well attested have been published, in which persons are stated to have undergone the whole of the variolous disease a second time, in a manner not to be doubted. That is, they have had variolous eruptions following the regular symptomatic fever. In support of this state-

ment the committee refer to the authorities subjoined, and have also selected the cases which follow as being particularly worthy of regard. Willan on Vaccine Inoculation. Ring on Cowpock. Med. & Phys. Journal, vol. 13. p. 570. Vol. 14. pp. 7, 176, 251, 404, 405, 407, 436. Vol. 15. pp. 436, 441, 442, 443, 444. Vol. 18. pp. 314, 315.

*"To the Editors of the Medical and Physical Journal."*

GENTLEMEN,

"Thinking the following account of the second appearance of smallpox in the same person, interesting; and that it may be usefully conveyed to the publick, through the medium of your very useful and widely circulated Journal, I have sent it for insertion. I am, &c.

EDW. LEESE.

*"East Street, Manchester Square,  
August 18, 1805."*

"Mrs. PIDGEON now living as housekeeper with Mr. Jarnet, of David Street, the corner of East Street, Manchester Square, informs me, that her late husband, when about fifteen years of age, then residing as a gardener with Capt. Markall, of Honiton, in Devonshire, was inoculated for the smallpox by Mr. Buller, a surgeon of that place; that his arm inflamed very much; and that it was succeeded by a thick eruption of pustules all over his body; his feet were so full of them, that he was unable to stand. He was for some time confined; and so very ill, that Dr. Robinson, of Honiton, was requested to see him. Dr. Robinson and Mr. Buller continued to attend him till his recovery, without expressing any doubt of the nature of the disease.

"Some years after, a lad in the same family had the small pox; during the progress of which, he slept with him, and received no inconvenience.

"When he was about twenty-eight years of age, his own children had the smallpox; of which one died. He lived and slept with them, and at length was taken so ill, as to be obliged to leave his work; complaining of sickness, head-ach, and severe pains in his back. The medical gentleman attending the chil-

dren was sent to; who observed, that if he had not already had the smallpox, he should think he was then sickening for it. After an illness of two or three days, a full eruption of the confluent smallpox made its appearance; of which he died on the eleventh day.” [Med. & Phys. Jour. vol. 14. p. 251.

“ *Copy of a Letter from the Earl of Westmeath, to Dr. Jenner, dated May 23, 1805.*

“ SIR,

“ Understanding that a report has been circulated, which, if believed, would tend much to weaken that confidence, which is at present so generally and so justly entertained by the public, in your system of inoculation for the cowpox, namely, that my youngest son had taken the natural smallpox, after having been vaccinated, I think it but justice to you to contradict the report; and to state, for your satisfaction, the real circumstances of the case, which are as follow :

“ When he was about two months old, he was inoculated for the smallpox, in the Suttonian method, by a physician in Ireland, who has been very generally successful in inoculation, and pronounced by him to be perfectly free from the risk of infection; notwithstanding which, he caught the infection, about a fortnight since, and is now recovering from the natural smallpox.

“ I beg to inform you, at the same time, that my youngest daughter, who was vaccinated by you, about four years since, has not only been frequently exposed to the danger of infection, but was actually inoculated for the smallpox, without taking it. I have considered it incumbent on me to bear testimony to the efficacy of the vaccine system, as I consider the report relative to my son, which originated in misrepresentation, to have been circulated for purposes obviously prejudicial to that most useful and fortunate discovery.

“ I request you will make any use of this communication, which you may think necessary.

“ I am, Sir,

“ Your obedient humble servant,

“ WESTMEATH.”

[Ibid. p. 256.

*“ Arundel, September 13, 1805.*

“ SIR,

“ I yesterday received your letter, and shall be happy if any information I can give, concerning a person's twice having had the smallpox, should contribute towards removing the doubts which exist, of the superiority of vaccination.

“ In the year 1738, the smallpox committed its furious ravages in this place, and is said to have destroyed one out of every seven whom it attacked. Amongst the number of infected was William Birt, at that time about eighteen months old. It has been a tradition here, as long as the oldest of the inhabitants can remember, that this boy was supposed to have been dead ; and that his body was purchased by Mr. Birch, a surgeon, for the purpose of dissection. He, however recovered ; and for the rest of his days, was a living monument of the havoc the disorder had made. I knew him well ; and do not recollect many instances of a person more fretted and seamed by the smallpox than he was.

“ The marks he bore, were deemed a sufficient security against any future infection of the smallpox. He was therefore appointed to attend on variolous patients in the pesthouse ; a kind of lazaretto at the skirts of the town.

“ One woman died of the smallpox in the house, on the 15th of February, 1799, and another a few days after. William Birt, the subject of your inquiries, sickened on the 28th of the same month ; and the eruption appeared on the fourth day. I saw him on the sixth day of the disease, being sent for by the family to give my opinion on the possibility of its being the smallpox ; which none of them could believe, from the evident marks of his having had the complaint.

“ On inquiry I found, that he had been exposed, a short time before, to variolous contagion ; and that his disorder commenced with the symptoms usually attending the worst kind of the smallpox. The eruption was confluent ; and his throat was severely affected. He was removed from his home, on the day I visited him, to the pesthouse ; where he died on the twelfth day of the disease.

" If this detail can be of any service, I beg you will accept it, with my sincere wishes, that it may contribute towards the advancement of your pursuits.

" I am, &c.

" WILLIAM PLOWDEN.

" MR. RING."

[Ibid. p. 404.

*Extracts from a paper by Mr. Ring.*

" The two following cases were communicated to me by Dr. Jenner ; and published in my answer to Mr. Goldson. Mr. Fewster of Thornbury, the celebrated inoculator, had the small-pox in his youth, and was exposed to the infection with impunity for forty years ; yet, happening to wound his finger with the point of a lancet, charged with variolous matter, the puncture inflamed and suppurated ; and he had a considerable number of pustules on his forehead.

" Mr. Scott, another surgeon in the same town, had the small-pox by inoculation ; which proved to be of the confluent kind. Nevertheless, he caught it again twenty years after, from a patient whom he was attending ; and had it with some degree of severity.

" *Princes Street, Cavendish Square.*

" SIR,

" I have sent you four cases, containing a plain narrative of facts. I cheerfully submit them to you, from a conviction that they will be employed, as far as they are capable, for the advancement of truth and science.

" I am, &c.

" WILLIAM ROYSTON."

" *Cases of casual Smallpox succeeding to the inoculated disease, after an interval of nineteen years.*

" Sarah and Mary Taylor were inoculated for the smallpox ; Sarah when two years, and Mary when four days old. Sarah was inoculated by a Mr. Richardson, who was engaged in practice with, or was a pupil of Sutton. She had but few pustules.



and those faded early, but she was pronounced safe. Mary was inoculated by Mr. Robert Muriel, a respectable country practitioner, and the virus which he used was taken from a person who had the disease by inoculation. She went regularly through the distemper, had a considerable crop of pustules, and an indelible mark remains in her arm where the matter was inserted. During a period of nineteen years these young women, perhaps, were not exposed to the smallpox contagion ; but at the end of that time, in February 1788, a general inoculation took place in the village where they resided. Sarah was then attacked with the casual disease ; the pustules were confluent in her face, but distinct in other parts ; she was blind some days. Mary took the disease at the same time ; the pustules on her were numerous but distinct, and turned on the second day.

*“ Case of Smallpox occurring a second time.*

“ Mary Feakins, of Somersham in Huntingdonshire, had the smallpox in the year 1769, the disease being then very general in the neighbourhood. It appeared in her in its severest form, and she suffered extremely. When she was attacked with the complaint she nursed an infant daughter, then six weeks old, who took the smallpox from her mother, had a confluent kind, was much marked, and lost an eye. In the year 1788, when this daughter was nineteen years old, on being exposed to the accumulated contagion of the smallpox, she was again attacked with the disease ; and I attended her. This second attack was not of the slight kind which has been observed to occur in nurses. The eruptive fever continued four days ; there was considerable inflammation about the fauces ; the number of pustules in her face amounted nearly to two hundred, with a proportionate crop over the surface of the body. The pustules on the face arrived at the acme of maturation on the seventh day from their appearance. Swelling in the face closed the eyes ; the extremities were tumefied, and some degree of ptyalism took place. The accumulated effluvium to which this girl was exposed occurred from her sleeping in the same room with three younger sisters, who

were down with the disease, one with the casual sort, and two by inoculation.”\* [Ibid. vol. 15, p. 442.]

This doctrine, that the small-pox will sometimes occur twice in the same subject, is not new ; although it has been controverted by great authorities ;† but the occurrence is so rare, that it has not been found during the experience of nearly a century to constitute any serious objection to variolous inoculation. For in the first place, the question is not whether those who have had the smallpox once are capable of being affected at all by variolous matter, but whether they are *secure against severe affections* by the application of that matter to them. If, when they have once undergone the disease, whether produced by casual infection or by inoculation, they are not liable to suffer severely from it again, and if the disease, when produced in the latter mode, was far more mild and safe, than when produced in the former, the utility of inoculation was sufficiently decided. Such was found to be the case generally. If one exception has occurred to this general rule in a thousand cases, and even if every person should die, who experiences a second attack of the disease, such rare exceptions could not form any objection to the practice of inoculation. The truth has been much more favourable than these suppositions represent it.

The advantages of variolous inoculation therefore have long ceased to be questioned, and even these objections to the practice were almost forgotten, till the contest respecting the vaccine disease has revived the consideration of them.

If the vaccine disease affords equal or nearly equal security with the variolous, it must be needless to point out its superior

\* The cases of Diemerbrook, and that of Withers in the 4th vol. of the *Memoirs of the London Medical Society*, have often been quoted. Mr. Ring remarks “ it is worthy of notice that in almost every instance where I have inquired into a failure, or supposed failure, in the inoculation of the cowpock, I have heard of a failure, or a supposed failure, in the inoculation of the smallpox.” By *failure* he means a failure to give security from smallpox.

† Sir William Watson, Dr. Archer, Baron Dimsdale, and Mr. William Sutton. See *Med. and Chir. Rev.*

advantages in other respects. "It is equally safe at all ages and in every season, and does not occasion confinement; it neither diffuses contagion nor excites scrophula; and it is free from the danger attending the inoculated smallpox, which still proves fatal in one case out of two hundred and fifty." That it does in the great majority of cases afford a temporary security is so generally admitted even by its opponents, that on that head it would be useless to adduce proofs. Let it suffice to state the principal objections to the practice, which have been made by the most sagacious antivaccinists, and to describe the methods which have been proposed to obviate even the few evil consequences, which are attendant upon it.

The objections are, first that the security it affords is not permanent; second, that the occurrence of other contagious diseases, as hooping cough, measles and chickenpox, in persons who have been vaccinated will restore the susceptibility of variolous contagion; third, that although the genuine cowpock may secure its subjects from smallpox, yet its character is so imperfectly marked, that few if any practitioners are capable of determining them with precision and certainty; fourth, that it is productive of horrid and loathsome diseases, which occasion protracted sufferings and sometimes death.

We may first remark that these objections are precisely similar to those, which for a long time delayed the universal adoption of variolous inoculation.

To the first objection, the want of permanence in the security afforded by vaccination, Dr. Jenner long since offered a sufficient refutation by giving a list of persons, who had been many years before casually inoculated and had undergone the cowpock, and who still resisted smallpox. Among many cases, which have since been adduced to corroborate his statement, none is more satisfactory, than those of Mr. Jesty, an English farmer, and his family. This man seems to have been among the first\* who ever practised vaccine inoculation by design. Having been ac-

\* There is an account of similar instances on the continent of Europe, as early and earlier.



accidentally inoculated with the cowpock himself and experienced the benefits of the consequent security from smallpox, he inoculated his wife and two sons with virus taken from the cow in the year 1774. One of these sons, Mr. Robert Jesty, was inoculated with variolous matter in London in the year 1805, thirty-one years after vaccination, and was found unsusceptible of smallpox.\* The father and all the family had frequently been exposed to the smallpox before, and the two sons had been inoculated for it in the year 1790, and in every instance without effect.†

The second objection, that certain contagious diseases following the cowpock restore the susceptibility of smallpox, does not carry with it the semblance of truth; and it is refuted by direct observations. Dr. Willan after relating cases of smallpox subsequent to vaccination, and noticing this objection says, "I have found, on inquiry, that more than half the children above-mentioned, who took the smallpox after vaccination, had been intermediately affected with the measles, chickenpox, scarlet fever, cynanche parotidæa, or hooping cough, but that in the rest there had not been any intervening disease. The changes of constitution produced between infancy and adult age, might, with as much probability, be supposed to remove the effects of the cowpox. This, however, is not the case in the natural cowpox, nor are adults less liable than children to failures in vaccination."

Dr. Willan refers to some observations on this subject by

\* Med. and Chir. Rev. vol. 12. p. lxxviii. miscellaneous.

† Mr. Jesty's experiments were made more than twenty years before those of Dr. Jenner. While these cases make a valuable addition to the testimony in favour of vaccination, the limited and unpublished experiments of Mr. Jesty do not detract in the slightest manner from the claims of Dr. Jenner on the respect and gratitude of mankind for having originated the practice of vaccination. Mr. Ring says, "Dr. Jenner never has claimed the merit of discovering the prophylactic power of the vaccine virus: but he is fully entitled to the praise of converting that discovery to general advantage." Dr. Jenner discovered to the world that this light was hid under a bushel,

Dr. Stanger of the foundling hospital in London. Dr. S. after relating the cases of twenty-one children in that hospital who resisted the smallpox after vaccination adds the following remarks, "The same twenty-one patients also supply the most satisfactory evidence to invalidate Mr. Goldson's supposition, that eruptive diseases may remove the security derived from cowpox. During the period which intervened between their being vaccinated in March 1801, and variolated in November 1804, six of them had scarlet fever and four measles. Ten of them had hooping cough also, which proves that these contagious febrile disorders, which so powerfully affect the constitution, have no influence in diminishing the efficacy of vaccination. As the first inoculation with variolous matter, in 1802, produced no constitutional affection, it cannot supply an argument against the durability of the antidote for three years and a half." Other authorities might be adduced to the same point.

The third objection recounted above states the difficulty of determining when the disease is genuine. This objection was in some measure just in the first years of vaccination, and great care is requisite to prevent it from being so at all times. The appearances at the part inoculated are alone to be relied on in determining whether the cowpock is or is not perfect. When the disease takes place in its most regular form, as with due care will happen with very few exceptions, no one will feel any hesitation, who has had a tolerable share of instruction on the subject. But there are observed in persons inoculated for cowpock appearances varying from those of the true disease; and these variations are in different respects and in different degrees. It does perhaps require considerable experience to gain an acquaintance with every anomaly which occurs in vaccine inoculation. But the safe course is to note down every case, which is doubtful, and at the end of six or twelve months to repeat the insertion of vaccine virus. The necessity of this precaution cannot be estimated too highly. The committee think it so important to point out the true distinctions, which must determine our judgments on this subject, that they have quoted at large the remarks

relative to it from two late writers ; the one Dr. Robert Willan, the accurate and faithful observer of cutaneous diseases ; the other Dr. Joseph Adams, the ingenious and scientific writer upon morbid poisons ; than whom perhaps no two men now existing are of higher authority in the case of a morbid poison producing its effects on the skin.

*Directions for performing vaccination and a description of the regular appearance of the disease.*

“ The general directions already given in smallpox inoculation, as far as they are applicable, may serve in cowpox : but the most important consideration is carefully to avoid using fluid in the smallest degree turbid. True vaccine fluid is so perfectly transparent, that on fine glass, or even on the point of a fine lancet, it cannot always be perceived. For the most part it escapes very slowly from the puncture made through the cuticle ; not being like the fluid of a blister contained in a single bag, but in a number of small cells communicating with each other. When it escapes in this gradual manner, it sometimes forms itself into a spherical shape, and retains its figure like a perfectly transparent jelly. There are, indeed, some varieties in this respect depending on the age of the vesicle, and the degree of inflammation with which it was attended ; but there is no exception as to its crystalline transparency.

“ It is generally thought best to take the fluid before the eighth day ; but when this is done the vesicle *from which we take it* should be watched till scabbing, for if without other violence than the above puncture, the contents should become matter or the scab soft, we ought not to depend on the issue of our vaccination, but to take another opportunity of repeating it.

“ 2dly. The pure matter taken as above, should be inserted at the end of a clean lancet, by a simple incision. It is not always easy nor important to avoid drawing a little blood. No means whatever for retaining the fluid, either of bandage or plaster, being used, the blood, if any escapes, should be suffered to dry on, as the best dressing for the little wound.

“ On the following day it will sometimes not be easy to ascer-

tain whether our inoculation has succeeded, but on the next, being the third, inclusive of the day of inoculation, you may perceive a red point which, being pressed by the finger, will give the sensation of a very small hardness immediately under the skin.

“ On the fourth day the point should be increased, and somewhat shaded or radiated. On the fifth a small vesicle or bladder may sometimes be perceived with the naked eye. On the sixth with still more certainty. This is gradually increased in size, the base rarely exceeding the summit, till the eighth or ninth, when the almost level summit will for the most part, exceed the base. During the whole progress a small indentation will usually appear, preserving the form of the incision.

“ Hitherto the appearance is very similar to smallpox, and in some cases cannot be distinguished from it. But from this time the difference is easily marked excepting in one kind of smallpox. In all others the inoculated part, however regular it may have proved till the eighth or ninth day, now becomes jagged at its edges, and its contents grow more or less purulent. In the cowpox the circular form continues, or if from the length of the puncture the form should be more oblong, still the edges will be well defined, the contents remaining limpid.

“ The external skin seems to thicken as the vesicle acquires its full size, and gradually approaches nearer to the amber colour. At other times the skin seems more transparent, and shows a blue tint beneath it. On these occasions the vesicle is flatter. This difference appears to arise from a higher degree of inflammation, in consequence of which the surface below is fuller of vessels conveying red blood, and affords a purplish appearance through the cuticle and lymph.

“ On one of these or the following day a considerable redness appears round the vesicle ; this has been very properly denominated by Dr. Jenner the *areola*, or *small area*, round the vesicle. If this redness or areola has a well-marked edge at the extremity it never exceeds the boundary it first formed for itself ; but if it is deepest immediately round the vesicle and shaded from thence, its extent is much more uncertain ; though from the eighth or

ninth day the skin appears to thicken, and the vesicle to flatten, excepting round the edge, yet the contents are still limpid. The edge now forms a rim higher than the centre, so that the whole has been very well compared to a ripe mallow-seed. The surrounding redness ceases from day to day, the margin of the mallow-seed shrivels, the centre acquiring a crustaceous, and afterwards a stony hardness, at the same time gradually contracting itself, particularly round its extremities, so that the centre is generally most elevated, and the whole scarcely fills the little cavity in which it is contained. In this state it has been compared to a tamarind stone. This illustration, though for the most part correct, is less so than that of the mallow-seed, because the appearance of the scab is more various. It is, however, if uninterrupted, constantly stony, but varies in colour as much as the different shades of mahogany. In this state it remains sometimes for two or three weeks, and when it falls off leaves a scar which though not deep, has in all the cases I have seen, proved permanent like the smallpox. From the latter it differs not only in being more superficial, but in being marked with small and somewhat regular indentations. There is some variety in this appearance, which will hereafter be noticed.

“ When the progress has been so far regular, the patient has every security against the smallpox which our present knowledge affords. We shall hereafter take notice of certain deviations distinguishing between such as are consistent with the security of the patient, and such as render it doubtful.”

[Adams on Vaccine Inoculation, p. 110.]

*“ Deviations from the customary laws of vaccination.”*

“ Whenever we find it difficult to ascertain on the third day by the marks already described, whether our operation has proved successful, we should first examine the general state of health. If any symptoms of fever occur, we may be sure that the effect of vaccination is superseded by some other disease; and if our patient has been exposed to the measles or chickenpox the probability is, that he may go through one of those diseases before the progress of vaccination commences. In this manner the



vesicle after being formed, may be arrested at any future period before the sixth day and afterwards resume its action when the cause which interrupted it ceases. If the patient has been exposed to small pox and the feverish disposition should arise from that cause, the cowpox insertion will rather be hastened in its progress. It will afterwards proceed with the smallpox pustules retaining its proper figure, but without that surrounding redness which marks its genuine character.

“ But if we find no progress in the arm after the third day, nor any symptoms of fever, we should examine whether our patient has any other local complaints about him. Whether he has eruptions of any kind, and if it should be an infant, about the ears particularly. Whatever may be the issue of our examination we should repeat our insertion, as it cannot be attended with any injury. It will often happen that the second inoculation will not only succeed, but that the first will begin its progress at the same time, and both will go through the regular stages together. On all these occasions a more than ordinary attention is necessary to the progress of the vesicle, for these are the cases which have brought vaccination into the greatest discredit.

“ It will sometimes occur that after the inoculated part has proceeded to a certain height with its true character, it will suddenly assume the purulent appearance of any other eruption about the body. In this case we cannot expect the constitution to be secure, as the vaccine vesicle has not gone through its necessary stages. At other times the vesicle will complete its stages and at the end of the second, or beginning of the third week, or about the period when the scab is completed, the distant eruptions will assume the vaccine character, and heal in a few days after. In the last case we can have no doubts of the security of our patient, but as was before observed whenever the inoculated part becomes purulent from this or any other cause, it is absolutely necessary to vaccinate again.

“ If after repeating our vaccination, on account of the backwardness of the first, we find the same difficulties in the second, we may make a third attempt, but if this should fail also, the

health of the patient should be attended to, and, when restored, the attempt may be renewed. If there is no apparent obstacle in the health, we should still defer our insertion for a few months, and after repeating it then, if the same difficulties remain, we must leave it to the patient to determine when and whether he will wish to make any future trial. At the same time we should inquire whether any others of the family have resisted every exposure to smallpox infection and every attempt at inoculation.

“ It is generally said that vaccination produces no local effects but at the part to which the fluid is inserted. This is for the most part true ; but it is unquestionable that what are called secondary vesicles do sometimes occur : that is, an eruption of vaccine vesicles at distant parts of the body in the manner that smallpox pustules appear after the inoculation of that disease. It has been urged by some that these eruptions after cowpox are the effect of a second inoculation by the patient carrying the fluid of the first to a distant part. But this is easily distinguished. When matter is carried in this way, the vesicle formed always finishes its progress at the same time as at the part first inoculated : whereas secondary vesicles never *appear* till the close of the second or beginning of the third week, when the original vesicle has begun to scab.

“ Besides these secondary vesicles a number of small hard elevations sometimes occur at different periods of vaccination, most commonly at the commencement of scabbing. They are of no consequence, and subside without any other than the common remedies.”

[Ibid. p. 123.

*“ On the characteristics and effects of perfect vaccination.*

“ Vaccination is accounted perfect, when recent lymph has been carefully inserted beneath the cuticle, in a person free from any contagious disorder, and has produced a semi-transparent, pearl-coloured vesicle, which after the ninth day, is surrounded by a red areola, and afterwards terminates in a hard, dark-coloured scab.—The form and structure of this vesicle is peculiar. Its base is circular, or somewhat oval, with a diameter of

about four lines on the tenth day. Till the end of the eighth day, its upper surface is uneven, being considerably more elevated at the margin than about the centre, and sometimes indented by one or two concentric furrows, but on the ninth or tenth day the surface becomes plane, and in a very few instances the central part is highest. The margin is turgid, firm, shining, and rounded so as often to extend a little beyond the line of the base. The vesicle consists internally of numerous little cells, filled with clear lymph, and communicating with each other. The areola, which is formed round the vesicle, is of an intense red colour. Its diameter differs in different persons from a quarter of an inch to two inches, and it is usually attended with a considerable tumour and hardness of the adjoining cellular membrane. On the eleventh and twelfth day, as the aerola declines, the surface of the vesicle becomes brown in the centre, and less clear at the margin. The cuticle then begins to separate, and the fluid in the cells gradually concretes into a hard rounded scab of a reddish brown colour. This scab becomes at length black, contracted, and dry, but it is not detached till after the twentieth day from the inoculation. It leaves a permanent circular cicatrix, about five lines in diameter, and a little depressed, the surface being marked with very minute pits or indentations, denoting the number of cells of which the vesicle had been composed.

“ During the progress of the vesicle some disorder takes place in the constitution, and there is frequently on the arms and back a papulous eruption resembling some forms of the Lichen and Strophulus. These circumstances we should by analogy judge desirable; but they do not always occur, nor are they deemed requisite to ensure the full effect of vaccine inoculation,—that effect, which, as ascertained and announced by Dr. Jenner, is allowed to be more important than any event which the history of medicine can furnish.”

[Willan on vaccine inoculation, p. 9.

“ *On imperfect vaccination.*

“ Vaccination is imperfect, or insufficient, I. When the fluid employed has lost some of its original properties. II. When



the persons inoculated are soon afterwards affected with any contagious fever. III. When they are affected, at the time of inoculation, with some chronic cutaneous disorders.

“ I. The qualities of the vaccine fluid are altered soon after the appearance of an inflamed areola round the vesicle : and the fluid, although taken out of the vesicle in the best possible state, may be injured by heat, exposure to air, moisture, rust, and other causes.

“ When scabs are formed over variolous pustules, and vaccine vesicles, the matter they afford is often acrid and putrescent, and, if inoculated, it perhaps neither communicates the vaccinopock, nor the smallpox, but produces a fatal disease, with symptoms similar to those which arise from slight wounds received in dissecting putrid bodies. Should the pustules of smallpox remain entire till the twentieth day of eruption, matter taken from them, even at that period, will sometimes communicate, by inoculation, the disease in its usual form, though perhaps with considerable virulence. We are, however, now assured on good authority, that matter improperly kept, or the thick matter taken from collapsed and scabbing variolous pustules, and used for the purpose of inoculation, does not always produce the smallpox, nor prevent the future occurrence of that disease, although the persons inoculated may have had inflammation and suppuration of the arm, and pains in the axilla, with fever and eruptions on the ninth or tenth day. In like manner if the vaccine fluid employed be taken at a late period, as from the twelfth to the 18th day, it does not always produce the genuine cellular vesicle, but is in some cases wholly inefficient, while in others it suddenly excites a pustule, or ulceration, in others an irregular vesicle, and in others erysipelas. Similar appearances are observed, when fluid taken from a perfect vesicle on the sixth, seventh, or eighth day has been injured, before its application, by some of the causes above enumerated. In addition to them, I may observe that if the vesicle be ruptured, at an early period, by friction, or scratching, the inoculation sometimes proves imperfect. Failures may have also been occasioned by repeatedly puncturing,

or draining the vesicle, on two or three successive days. The fluid, which is afterwards secreted into the cells thus exhausted, may, by a difference of properties, or by too much dilution, be rendered incapable of acting fully, either on the person from whom it is taken, or on those to whom it is communicated. Some of the early failures, in persons inoculated at different publick institutions, are perhaps referable to this cause, the demands for vaccine fluid in 1799, and 1800, having been very numerous, the cases to supply them comparatively few.\*

“ II. Eruptive fevers and other febrile diseases, interfere with the progress of the vaccine vesicle. The measles, scarlatina, varicella, typhus, and influenza, appearing soon after vaccination, either render it ineffective, or suspend the action of the virus, so that, in some cases, the progress of the vesicle is very slow, and the areola is not formed till the fourteenth day or later, and sometimes not at all. Dr. Jenner has recorded the case of a child, on whom the scarlatina, with a sore throat, appeared on the ninth day of vaccine inoculation. The vesicle enlarged as usual, ‘yet there was a total suspension of the areola, until the scarlatina had retired from the constitution.’ In a sister of this patient, the fever and scarlet efflorescence took place faintly on the same day, but suddenly disappeared, the areola having been formed round the vesicle. Four days afterwards, on the decline of the vesicle, the scarlatina anginosa returned with its usual symptoms.

“ III. The cutaneous diseases which sometimes impede the formation of the genuine vaccine vesicle,† are herpes (including

\* It is an useful caution to vaccinate in two or three places, and to puncture only one of them to procure the virus: that is to allow at least one vesicle to go through its whole course undisturbed.

† “ Variolous inoculation sometimes fails from the same cause. See Dr. Jenner, and Mr. Hill, *Med. and Phys. Journal*, for June, 1805. Compare the *Journal* for May, 1803, and Aug. 1804.

“ Dr. Jenner has favoured me with the following instance:—‘ The child of a gentleman at Blakeney, Gloucestershire, was at two years of age inoculated for the smallpox with others of the same family. In this child, there was a deviation from the usual appearances: the arm inflamed and suppu-

the shingles and vesicular ringworm), the dry and the humid tetter, and the lichen, but especially the porrigo (or tinea) comprising the varieties denominated *crusta lactea*, *area*, *achores*, and *favi*, all of which are contagious. To these perhaps should be added the itch and prurigo.

“ Imperfect vaccination is not characterized by any uniform sign or criterion, but exhibits, in different cases, very different appearances, as pustules, ulcerations, or vesicles of an irregular form. The vaccine pustule is conoidal; it increases rapidly from the second to the fifth or sixth day, being raised on a hard inflamed base, with diffuse redness extending beyond it on the skin. It is usually broken before the end of the sixth day, and is soon after succeeded by an irregular yellowish brown scab. The redness disappears within a day or two, and the tumour gradually subsides. According to Dr. Jenner, ‘ Its commencement is marked by a troublesome itching, and it throws out a premature efflorescence, sometimes extensive, but seldom circumscribed, or of so vivid a tint as that which surrounds the pustule (vesicle) completely organized; and (which is more characteristic of its degeneracy than the other symptoms) it appears more like a common festering produced by a thorn, or any

rated, but not extensively: some slight indisposition took place, and a few pimples were scattered over the skin, which did not suppurate. The parents not being quite satisfied, the child was inoculated a second time, with variolous matter, about two years afterwards, when the appearances on the arm, and the disorder of constitution, recurred as at first. Soon after this time, the child was put to bed with a person who had a full burthen of small-pox, but was not infected. When two years more had elapsed, the child was vaccinated by Mr. Lauder, an experienced and respectable surgeon at Newnham. The puncture produced only an incomplete pustule, surrounded by considerable inflammation. Mr. Lauder then consulted me, and on my making inquiry respecting the state of the skin, he told me that the child, from its early infancy, had been affected with eruptions on its head, and other parts of the body. Feeling satisfied that he had thus accounted for the preceding circumstances, I endeavoured first to subdue the eruptions. As soon as this was accomplished, the child was again vaccinated, when a pustule appeared, which went through all its stages, with the most perfect regularity and correctness.”

other small extraneous body, sticking in the skin, than a pustule (vesicle) excited by the vaccine virus. It is generally of a straw colour, and when punctured, instead of the colourless transparent fluid of the perfect vesicle, its contents are found to be opaque.\*

“ Respecting the ulceration, Dr. Jenner observes, ‘ In a late case, the punctured part on a boy’s arm (who was inoculated with fresh limpid virus,) on the sixth day, instead of shewing, as usual, a beginning vesicle, was incrustated over with a rugged amber-coloured scab. The scab continued to spread and increase in thickness for some days, when at its edges a vesicated ring appeared, and the disease went through its ordinary course, the boy having had soreness in the axilla, and some slight indisposition. With the fluid matter taken from his arm, five persons were inoculated. In one, it took no effect; in another, it produced a perfect vesicle; but, in the other three, the progress of the inflammation was exactly similar to the instance which afforded the virus for their inoculation: there was a creeping scab, of a loose texture, and subsequently the formation of limpid fluid at its edges.’\* ”

“ Dr. Woodville has mentioned a similar appearance, and considers it as indicating an ineffectual inoculation.

“ He refers ‘ to cases in which it happens, that though the local affection does not exhibit much more inflammation than is usual, yet neither vesicle nor pustule supervenes, and, in which, about the sixth or seventh day, it rapidly advances into an irregular suppuration, producing a festering or crustaceous sore.’ ”

“ These ulcerations probably originate from the vaccine pustule, which on account of the itching it excites, is sometimes scratched off at a very early period, or being prominent and of a loose texture, is injured and exasperated by the friction of the clothes, &c.

\* “ Dr. J. remarks elsewhere, ‘ In some instances, the ring of vaccine fluid fixed a boundary to the extension of the scab, the efflorescence followed, and the constitution was found secure from the smallpox; but in other instances, the process ended more abruptly, and then of course the susceptibility of the vaccine virus remained, which was proved by subsequent inoculation.’ ”

“ Inoculators are now generally acquainted with the pustule and ulceration above described ; but the chief nicety and difficulty of vaccination, is in distinguishing from the genuine vesicle, some irregular vesicles, which have often been mistaken for it, and which do not wholly secure the constitution from the smallpox.

“ I have observed three sorts of these irregular vesicles. The first is a single pearl-coloured vesicle, set on a hard dark red base, slightly elevated. It is larger and more globate than the pustule above represented, but much less than the genuine vesicle : its top is flattened, or sometimes a little depressed, but the margin is not rounded or prominent.\* The second appears to be cellular like the genuine vesicle, but it is somewhat smaller, and more sessile, and has a sharp angulated edge. In the first the areola is usually diffuse, and of a dark rose-colour : in the second it is sometimes of a dilute scarlet colour, radiated, and very extensive, as from the sting of a wasp ; at other times it has the form and colour exhibited Pl. I. No. 7.† The areola appears round these vesicles on the seventh or eighth day after inoculation, and continues more or less vivid for three days, during which time the scab is completely formed.‡ The scab is smaller and less regular than that which succeeds the genuine vesicle ; it also falls off much sooner, and, when separated, leaves a smaller

\* “ A vesicle of this kind appeared in the vaccination of Miss Georgiana Whitworth (M. and P. Journal, August, 1801. See the last note.) ‘ It was,’ according to Dr. Fawcett, ‘ more globular, and seemed to have a thinner pellicle than the genuine cowpock.’

† All these remarks are illustrated by coloured engravings in Dr. Willan’s work, which we regret very much that we cannot imitate.

‡ “ Mr. Whately has well described an irregular vesicle as it occurred after inoculation, in two persons who had previously had the smallpox. “ A slight inflammation took place round the punctures on the second day, and gradually increased to the ninth, when its appearance was erysipelatous, and its extent round the vesicle was at least a hand’s breadth. It had not the areola usually met with in the cowpock ; but in two places there were red lines of the breadth of a finger, in the course of the lymphatics. On the eighth day



cicatrix, which is sometimes angulated.—The third irregular appearance is a vesicle without an areola.

“The vaccine pustule, and ulceration, may sometimes arise from the insertion of effete or altered virus; but they mostly occur in persons labouring under the eruptive complaints mentioned page 117.\*

“The irregular vesicles are produced by some of the causes enumerated page 115-6.—The vesicle without an areola, takes place if the person inoculated have previously received the infection of the smallpox, or if he be affected with some other contagious fever, during the process of vaccination.

“I observed the co-existence of an irregular vesicle, and the vaccine pustule, in a girl five years old, probably one of those who are not susceptible of the smallpox. She was first vaccinated without any perceptible effect, although six children of the same family had the regular vaccine disease by means of fluid taken from the person from whom she was vaccinated. The little girl was again vaccinated in both arms, about two months afterward, when she had the vaccine pustule from the puncture in the right arm, and from that in the left, a vesicle without any areola, and of an irregular form, one side of it being much more elevated than the other. The year following she was inoculated with recent variolous matter, but did not take the smallpox.

“Professed inoculators, I make no doubt, have observed other modifications of the inoculated vaccine disease. The irregular appearances above described, and represented by engravings, may serve to put those who have less experience, on their guard, and

there was much pain in the axilla, with feverish symptoms, and loss of appetite. From this time, the inflammation declined, and in four days, it wholly disappeared, leaving on the inoculated part, a horny scab, which did not fall off for some days.’ See Mr. Ring’s treatise, p. 711.

\* “See Dr. Jenner’s Obs. M. and P. Journal, for Aug. 1804. Mr. Hutchinson’s, April 1801. The effect of cutaneous eruptions on the vaccine vesicle is frequent, not universal. Compare Dr. Wood’s and Mr. Creaser’s Remarks, M. and P. Journal, Feb. and April 1806.

induce them, when there is any deviation from the regular form and course of the vesicle, to reinoculate at a future period.

“ In Dr. Woodville’s opinion, ‘ whenever vaccine innocation excites a pustule of any kind, though it continue but one or two days, and should be succeeded by an ulcer, the inoculation is as effectual as where the tumour has proceeded in the most regular manner.’—Further experience has ascertained that neither the vaccine pustules nor ulcerations sufficiently protect the constitution from the smallpox, yet that in a few instances, matter taken from the pustule has communicated by inoculation the genuine vesicle, and that, in some, the vesicle on the sixth or seventh day succeeded, or took the place of the pustule,\* as if the patients had been inoculated from themselves. In the greatest number of cases, however, the vaccine pustule, on inoculation, produced a pustule of the same kind, and thus laid the foundation for a series of inefficient inoculations. Dr. Odier began to vaccinate at Geneva, with virus taken on threads from the arm of a nobleman who had previously had the smallpox. Twenty children were inoculated successively with this matter, and similarly affected. Their arms inflamed within eight hours, and afterwards suppurated abundantly, but with an exudation from beneath a thick crust. Fever supervened, with vomitings, and other symptoms, which, however, ceased in forty-eight hours. Seventeen of these children being afterwards inoculated with variolous matter, had the smallpox with different degrees of virulence, and three of them died, having taken the disorder by casual infection.

“ The effect of vaccination, when there are irregular vesicles

\* “ Mr. Ring’s Treatise, p. 668 ; p. 370, from Dr. Cappe ; and p. 941, from Dr. Sacco.—I may mention as an analogical fact, that in some cases of variolus inoculation, there are two successive eruptions. The first consists of large distinct pocks, without fever : in the second, which takes place on the ninth or tenth day after the first, the pustules are small and coherent, or sometimes confluent. With these cases I would rank that of Mr. King’s child noticed in the *Med. and Phys. Journal* for Nov. 1805, p. 405, and by Dr. Fraser. Instances of a similar irregularity in the eruption of the measles I have given elsewhere. See *Reports on Diseases in London*, p. 106.”

(p. 118) is different in different cases. They appear fully to secure some individuals from the infection of the smallpox, in others the constitution is but imperfectly guarded against the smallpox by these vesicles, the disease taking place after them, at different intervals, under a particular form.\*—I may add further, that when the fluid they contain is used for the purpose of inoculation, it sometimes produces an irregular, and at other times a genuine vesicle. According to Dr. Jenner, ‘The vaccine fluid, even in a pustule (vesicle) going through its course perfectly, if taken in its far advanced stages, is capable of producing varieties, which will be permanent, if we continue to vaccinate from it.’

“Mr. Mudge’s dissertation on the inoculated smallpox, affords an instance of an irregular and insufficient form of the smallpox thus perpetuated. In a series of inoculations, he says, ‘Thirty were inoculated with crude matter taken from the arm on the fifth day after inoculation, but, though the infection took place so as to produce, in each patient, a very large, inflamed, and prominent pustule, with matter in it, yet not one of them had any eruptive fever, or a single subsequent eruption on any part of the body.’—‘The matter which was in these pustules, having been used to inoculate others, produced on them exactly the same appearances, unattended also with either fever or smallpox.’ ‘The whole number being reinoculated with matter taken after the eruptive fever, the result was that every one of them had the eruptive fever and succeeding eruptions: in short, they had the smallpox in different degrees, but all in the usual way of inoculated patients.’

“Since the vaccine virus, compared with that of the smallpox, appears to be more delicate, and more liable to degenerate, or to fail in its operation from various causes (page 115), several practitioners are of opinion that the variolous is preferable to the vaccine inoculation, and that it may be conducted with equal

\* “Persons thus partially or imperfectly guarded seem only to take the disorder after repeated or long-continued exposure to infection.



safety. I need not at present recapitulate the advantages of vaccine inoculation, which thousands have attested. The salutary effects of this practice, under the proper regulations, being fully established should we now desist from it, because it is found to require greater nicety and attention than many persons at first believed necessary? A very different conclusion ought surely to be drawn from failures, which were not so much the effects of accident, mistake, or oversight in the early inoculators, as of inexperience in the business they had undertaken. During the years 1799, and 1800, vaccine inoculation was practised by ten or twelve thousand persons in the united kingdom, who had never seen the vaccine vesicle before they began to inoculate, nor could be acquainted with its different stages and appearances. The right inference, from the mistakes or failures above stated, and from the nicety of vaccine inoculation, is, that only those should be inoculators who have had a sufficient education, and who have particularly attended to the subject of vaccination.

“ By an obvious collateral inference, we must be led to acknowledge the propriety of a strict examination of the persons inoculated between the 1st of Jan. 1799, and the 1st of Jan. 1802, and the necessity of re-inoculation in every doubtful case. In cities, and large towns, where medical practitioners have easy access to their friends and patients, the examination might be performed without much trouble, and, if a little address were employed, without exciting much alarm. I believe the scrutiny has, in some places, been already made; but my wish is, more particularly to impress the expediency of it on surgeons resident in small towns, and districts, remote from the original sources of vaccine inoculation. As they must, at first, have often received the fluid circuitously, they could not always be sure respecting its age and state, nor could they, being at that time without experience, know whether the appearances it produced were so decisive, that its effects would be adequate to the intended purpose. I do not by this observation mean to censure the gentlemen to whom it is addressed. Whatever credit we may allow ourselves in the metropolis, for skill, correct information, and local advantage, we must confess

that numerous mistakes and failures have occurred with us, some will say, more than in all the considerable towns of England taken together. Practitioners in the country having no resource but in their own sagacity, often acquire as much professional knowledge and experience as those who seem to have better opportunities. The most expert surgeon or physician, however, cannot at once see the whole extent of a new mode of practice or a new operation, or ascertain, otherwise than by repeated trials, whether it will be effective in every variety of circumstances and constitution. For this reason, I wish that practitioners throughout the country would, by revising their primary inoculations with a more experienced judgment, take care to ascertain the safety of those who have confided in them, and thus secure their own peace of mind; for what would their feelings be, if the smallpox, casually conveyed,\* should prove fatal to any of the persons whom they first persuaded to make trial of the new inoculation?"

[Willan on Vaccine Inoculation, p. 31.

The fourth and last objection, viz. that the vaccinepock is productive of other diseases is refuted by the observations and reports of those best qualified to give an opinion on this subject. Such are the Royal Jennerian Society, the Vaccinepock Institution in London, and various other vaccine institutions in Great Britain and Ireland. Such also is Dr. Willan, whom we have already quoted very largely, and whose extensive practice in London, particularly in cutaneous diseases, entitle his remarks on this subject to peculiar credit. He says, "I have carefully examined, with different physicians and surgeons, various cases of

\* "This disease appears from time to time in the remotest valleys and townships of Britain, and makes a dreadful ravage. The interval seldom exceeds twelve years. Mr. Bryce informs us that the greater part of the children, in two parishes of Scotland, were vaccinated by persons not of the medical profession, and who were unacquainted with the vaccine disease: 'The result was, that the smallpox came among them soon afterwards, and every one thus inoculated was affected with that dreadful disease; while those few that had been inoculated by persons acquainted with the appearances in cowpox, entirely escaped.' Pract. Obs. p. 168."

cutaneous eruptions attributed to vaccination. Instead of the mange, or any eruption communicable from quadrupeds to the human skin, we constantly found diseases, which were known, and have been fully described, by medical writers, more than a thousand years ago, viz. the lepra, the dry and the humid tetter, the prurigo, the chronic nettle-rash, and the strophulus candidus; but more especially the dandriff, the favus, the crusta lactea, the scaldhead, and the ringworm.—Some persons maintain that if the inoculation of vaccine virus does not excite new eruptions on the skin, it, at least, increases the number of the cutaneous complaints with which we were before acquainted, and renders them more inveterate. My own experience would authorise me to contradict this assertion, but I shall perhaps refute it more satisfactorily by exhibiting the annexed lists, which Dr. Bateman, at my request, extracted from the Register of patients at the Public Dispensary in London :

	Total number of diseases.	Number of chronic cutaneous eruptions.
In the year 1797 . . .	1730 . . .	85
1798 . . .	1664 . . .	82
1804 . . .	1915 . . .	89
1805 . . .	1974 . . .	94

“ This table shews that the proportion of cutaneous eruptions to all other diseases, was the same before the publication of Dr. Jenner’s inquiry, as in the 6th and 7th year of vaccination.

“ The following observations by Mr. Charles Brandon Trye, Senior Surgeon to the Infirmary at Gloucester, afford a striking confirmation of the above statement.

“ I. ‘ A more healthy description of human beings does not exist, nor one more free from chronic cutaneous impurities, than that which suffers most from cowpox, by reason of their being employed in dairies.

“ 2. ‘ The Gloucester Infirmary, one of the largest provincial hospitals, is situated in a county, in which accidental cowpox has been prevalent from time immemorial : many hundreds among the labouring people have had that cowpox since the establish-

ment of this institution, and that more severely than is generally the case in artificial vaccination ; and yet not a single patient, in half a century, has applied to the Infirmary for relief of any disease, local or constitutional, which he, or she, imputed or pretended to trace to the cowpox. And be it repeated and remembered, that the artificial in no respect differs from the accidental cowpox, except in being generally less virulent.'

" Glandular diseases are usual, and often immediate consequences, both of the natural and inoculated smallpox. In this respect, the vaccine, compared with variolous inoculation, has a decided advantage, being seldom succeeded by inflammation and suppuration of the glands. Among children of respectable families, I have not seen a single instance of scrophula, which could be fairly referred to the cowpox. The children of the poor are not affected with glandular swellings, immediately after vaccine inoculation, as they frequently are after the smallpox, measles, and scarlatina anginosa. Where scrophulous symptoms occur one, two, or three years after vaccination, we cannot surely, with justice, attribute them to it, since impure air, improper food, dirt, confinement, and virulent diseases, such as the lepra, scald-head, itch, and impetigo, so generally contribute to the production of glandular diseases in the lower class of people?"

[Willan on Vaccine Inoculation, p. 81.

It remains for us to describe the methods which have been proposed to obviate the few evils, which may arise in the practice of vaccination. These evils are the two following, for there are not any others worthy consideration. The first is the risk of the inoculator's relying on imperfect vaccination. The second the risk which every individual incurs of his liability to smallpox a second time, or what is the same, of smallpox after cowpock.

As respects the first objection it is to be obviated in future by acquiring the requisite instructions, and by revaccinating in all cases, where there is the least irregularity. But it is fair to presume that we have in times past had our full share of cases of imperfect vaccination. We necessarily undertook the practice without any other instruction than that obtained from books ;

and the laws of our Commonwealth have prevented our frequent appeals to the smallpox as a test in doubtful cases, a practice, by which inoculators in other parts of the world were enabled to acquire knowledge on this subject. The only remedy is to revaccinate at least all those, respecting whom there is the least doubt. Few of us however can remember with accuracy all the cases which have been under our care, and the imperfect cases are most likely to have been among the first. Would it not then be proper to offer to revaccinate all our patients of the years 1800, 1801, and 1802, agreeably to the proposal made by the very excellent writer\* whom we have so often quoted.

The second may perhaps appear the greatest evil, since it would seem that all our caution may be insufficient to afford us absolute security against the smallpox. We have already stated that those, who have undergone variolous inoculation, are equally unsafe. But while this saves the credit of vaccination, it does not remove the evil. The risk is however so small that it may not to some persons appear to be worthy any remedy. But it seems proper to state what remedy there is, and leave it to the parties most interested to judge for themselves, whether they will adopt it.

The medical officers of the Original Vaccinepock Institution in London employ as a test to all their patients a second inoculation with vaccine matter. They give to each patient a certificate that he has undergone the vaccine disease, with a promise that if he should afterwards take the smallpox the institution will pay to him the sum of five guineas. But as the inoculators have five guineas at risk in each case, they always require that the patient should submit to this test before they give the certificate. If the test be of any use, the wisdom of this requisition will not be questioned. Is not the risk to every patient as important as that of five guineas to the inoculator? If it is, surely it is reasonable that every individual should have proffered to him the security, which this test will afford. The following extracts from the minutes of the Vaccinepock Institution will show on what ground

\* Dr. Willan.

this second inoculation is relied as a test of susceptibility or unsusceptibility of smallpox.

*Extracts from the minutes of the Original Vaccinopock Institution.*

“Feb. 3, 1807. It having been intimated by several of the members of the committee of the College of Physicians for investigating the state of the vaccine practice, that they would be extremely glad of the opportunity of witnessing the trial of inoculating a certain number of persons with the variolous matter in one arm, and the vaccine in the other, after having undergone the cowpock, with the view of ascertaining the susceptibility for the one or the other of these ; it was proposed that at least twelve persons, before vaccinated at this institution, should be desired to attend on Saturday, February 14, for that purpose.”

[Med. & Chir. Rev. p. lxiv.

“Tuesday, Feb. 17, at a weekly board :—

“In a letter sent to the committee of the Royal College of Physicians by the medical establishment, on the subject of vaccination, it was proposed to submit to the decision, by experiment, the question—Whether a person, after cowpock inoculation, is not in the same state of susceptibility or unsusceptibility of the cowpock as of the smallpox, agreeably to the experience of this institution for several years back. For if the publick can be satisfied with regard to this fact, the test by inoculation with cowpock matter will then afford a proof of security equal to that by smallpox matter ; and, consequently, the practice of inoculation with variolous matter after the cowpock, which has been objected to as tending to the dissemination of that matter, will become unnecessary.

“Accordingly, the following fellows of the college attended yesterday (Monday the 16th) for their private satisfaction, to see this question determined by experience ; namely, Dr. Ash, Dr. Heberden, Dr. Pemberton, and Dr. Warren.

“The members of the medical establishment who conducted the experiments were, Mr. De Bruyn, Mr. Doratt, Mr. Payne, Dr. Pearson, and Dr. Shaw.



“ The variolous matter used in the experiment was taken from the vesicle of the inoculated part of the arm of Mrs. Allen’s child, 4, Knightsbridge, aged five months, the eleventh day from inoculation. It had been ill for the last two days, and eruptions were already coming out. There were two distinct vesicles in the parts inoculated, in the usual state at this period.

“ The patient who furnished the cowpock matter was Mr. Holder’s child, 10, Bateman’s buildings, who had on the arm three most distinct cowpock vesicles, which were ascertained to be in an efficacious state by producing the cowpock in several subjects.

“ The subjects of the trial were,

“ 1. Edward Baldock, aged ten years : three scars, now scarcely visible, were on the left arm, but had been very evident : inoculated at this institution Oct. 30, 1803.

“ 2. Charles Baldock, aged eight years : had one just perceived scar, but two others were now obliterated.

“ 3. Joseph Baldock, aged six years : three scars on one arm, and one on the other.

“ 4. Benjamin Baldock, aged five years : only one superficial scar remained from the former inoculation.

“ 5. Sarah Baldock, aged two years : two barely visible scars remained from the former inoculation.

“ These five children of Mr. and Mrs. Baldock, residing at Palace Green, Kensington, were all in a state of good health.

“ 6. Elizabeth Mc Donald, aged six years : had three scars, distinct but very superficial, from the former inoculation.

“ 7. David Mc Donald, aged four years : had only one superficial scar from the former inoculation.

“ 8. Anne Mc Donald, aged three years : had one superficial scar from the former inoculation scarcely visible.

“ These three were from the same family, at 1, Tufton street, Westminster : they had been inoculated at this institution October 30, 1803.

“ 9. William Mc Donald, brother of the three last mentioned children, aged eleven years, who had gone through the smallpox

when a year and a half old, happening to be present, he and the eight above named children were all inoculated by Mr. Doratt in the right arm, by three punctures with variolous matter, and in the left by three punctures with vaccine, immediately from the patients affording the matter present (except William Mc Donald, who, by mistake, was inoculated in the left arm with variolous matter, and in the right with vaccine.)

“ There were also inoculated on this occasion, Anne, James, and Richard Hodgson, of 1, Wimpole-street, who had gone through the cowpock at this institution.

“ 10. Anne, aged three years, was inoculated with smallpox matter in three places in the right arm, and in the left in three places with cowpock matter.

“ 11. James, aged four years : had two deep scars on the left arm, and one on the right, from the former inoculation ; was inoculated in three places in the left arm with smallpox matter, and in the right in three places with cowpock matter.

“ 12. Richard, aged five years : had three scars on the left arm from inoculation, and one on the right ; was inoculated in three places in the left arm only with variolous matter, an objection being made to inoculating the other arm.

“ These twelve subjects were directed to attend on Saturday, at one o'clock, at which time the gentlemen present proposed to meet again for the examination of the effects of the inoculation.”

“ Second meeting, Saturday, Feb. 21, 1807.—Present, Dr. Ash, Mr. De Bruyn, Mr. Carpue, Dr. Clutterbuck, Mr. Payne, Dr. Pearson, Dr. Shaw, Dr. Warren.

“ The vaccine matter inserted this day was from the child Shuker, ninth day after inoculation.

“ The variolous matter was from Allen's eruptions of the seventh day.

“ 1st. Two new patients attended for trial who had been inoculated at this institution December, 1803 ; viz.

“ 13. Thomas Pearson, aged nine years. By three punctures in the right arm, variolous, and by three punctures in the left

arm, vaccine matter was inserted. Had one superficial scar from the former inoculation.

“ 14. William Pearson, aged three years. Three punctures in the right arm received variolous matter, and three punctures in the left received vaccine. Had a superficial scar on each arm from inoculation formerly.

“ 2d. The Hodgsons inoculated at the last meeting attended. Richard Hodgson had now in the left arm three pimples, not unlike the fourth day of inoculated smallpox or cowpock. No effect till yesterday.

“ James Hodgson ill the day before yesterday ; to-day is recovered. Has three large pimples, which seem to be scabbing, on the right arm ; three pimples still more decidedly scabbing in the left arm.

“ Anne did not attend ; but Mrs. Hodgson reported that there was no effect at all.

“ 3d. Elizabeth Mc Donald. On the left arm were three pocks much like those of the former patients, Richard and James Hodgson ; on the right arm three larger pocks than on the other arm.

“ Anne Mc Donald. The left arm bore three pocks much the same as the former ; on the right arm much the same pocks as the former : Anne's appeared infected the day after insertion.

“ William Mc Donald. There were three pimples in a scabbing state in each arm, but less defined than the former subjects. The arms inflamed the next day after insertion. Quite well.

“ 5th. The three following, inoculated at the former meeting, were examined.

“ Edward Baldock. On the right arm were three pocks exactly like the fifth or sixth day of the cowpock, well defined. Left arm ; just marks of the punctures remain. There had been no inflammation of the arms.

“ Charles Baldock. Right arm, three small pimples in the scabbing state. Left arm, three scabbing pimples much like the other. Quite well.

“ Joseph Baldock. Right arm, three pimples like the former, but inflamed ; probably from scratching. Left, red marks only.

“ Benjamin and Sarah Baldock did not attend.

“ Third meeting, Thursday, Feb. 26, 1807.—Present, Dr. Ash, Mr. De Bruyn, Mr. Thompson Forster, Dr. Heberden, Dr. Nelson, Mr. Payne, and Dr. Pearson.

“ The family of the Baldocks all attended, being the eleventh day after insertion.

“ 1st. Edward Baldock. Right arm had three pocks in the inoculated part in a semi-purulent state, not very unlike ninth day smallpox.

“ On the ninth and tenth days, it is said, there was much redness and inflammation round the part inoculated, but which is now totally gone off.

“ Five or six days ago, complained of a swelling in the axilla of the right arm, with pain : now gone off. Matter was taken from these pocks upon glass for trial. The outline of the areola is barely visible.

“ In the left arm the marks of the punctures are just visible ; has had no pain of the axilla in that arm, nor of the shoulder. Was heavy, dull, and poorly, particularly on the seventh and eighth days, but was pretty well on the ninth, on which day the redness upon the arms was pretty considerable.

“ Charles Baldock. On the right arm two of the three small scabs have fallen off ; one, of the size of a pin's head, remains. There has been no redness of this arm. On the left arm scarcely any traces of the pimples now remain. No illness.

“ Joseph Baldock. On the left arm three small scabs from the pimples. There has been no inflammation nor pain of the arm-pits. Right arm, only traces of the punctures left ; pain of the arm-pits or shoulders on this side. No illness.

“ Benjamin Baldock. Right arm, three extremely small scabbed pimples. Left arm, three ditto : no inflammation of the arm nor pain of the arm-pit. Was poorly on the seventh day, when a few fleabite like spots appeared, of which some now remain.

“ Sarah Baldock. The traces of the three pimples upon each arm just remaining. No illness, and quite well.

“ 2d. William Mc Donald, aged eleven years, who had had

the smallpox in the natural way nine years ago, by which he is distinctly but slightly scarred. The three pimples in each arm exactly alike. There has been no redness, pain, nor illness.

“ Elizabeth Mc Donald. Three very distinct marks in each arm from the punctures, and much alike. Those on the left arm are on the three scars from former inoculation. There has been no redness in either arm, nor pain of the arm-pits, nor illness.

“ David Mc Donald. Marks on each arm from the punctures, only more evident in the right arm than the left. No redness since the day after the insertion, nor any pain nor illness subsequently.

“ Anne Mc Donald. The right arm exhibits three scabbed pimples. On the left, three scabs as large have fallen off, and left three larger marks.

“ 3d. Thomas Pearson. Several days after insertion on the right arm were two distinct pimples only. There has been no redness. Left arm, two similar but smaller pimples.

“ William Pearson. Right arm, two elevated pimples, not unlike the third or fourth day variola or vaccine ; a third larger, with red irregular areola round it. On the left arm similar pimples to the former, but smaller. No inflammation nor redness, but ill ever since Saturday, the day of inoculation ; probably from cold.

“ 4th. The Hodgsons. Richard had three scabbing pocks, containing matter not like either cowpock or smallpox ; James, only small scabbed pimples in parts inoculated ; Anne, no traces of inoculated parts.

“ The following cases were reported, being relative to the question under determination.

“ Tuesday, Feb. 24, two boys, Robert Brush, nine years old, No. 3044, and James Brush, No. 3045, from 10, Margaret-street, Cavendish Square, having gone through the cowpock in the usual way, by inoculation at the Institution in January last, were inoculated in three places in the right arm with smallpox matter, and in three places in the left arm with vaccine.

“ Eleventh day, Friday 6th of March : James (13,) three



large scabbing pocks appeared on the left arm, unlike vaccine scabs ; and on the right, no effect from the insertion of variolous matter.

“ Robert Brush. On the right arm were three large scabbing pimples, much like those of his brother, but smaller. On the left arm no effects were perceived from the insertions.

“ Tuesday, 10th March, fifteenth day. James Brush : Three scabs on the left arm, unlike either vaccine or variolous. On the right arm no traces of the insertions.

“ Robert Brush : Two scabs on the right arm irregularly figured, otherwise like fifteenth day vaccine, although from variolous matter. Left arm, nothing seen from the insertions of vaccine matter.

“ *Conclusion.*—According to these trials, which serve to confirm several hundred others already instituted by this establishment, the constitution is alike susceptible or unsusceptible of the smallpox and cowpock ; of course, the matter of the latter may be relied upon as a test, as much as that of the former. However, as the local affection of the cowpock without constitutional disorder not unfrequently resembles the cowpock attended by constitutional affection ; and as, in a certain proportion of cases, the smallpox can take place after distinct cowpock, as well as the cowpock ; it has been asserted that a person is susceptible repeatedly of the cowpock, though not of the smallpox, and in this way the error may be explained.

“ *Remarks.*—1. From the preceding cases, it appears that neither the smallpox nor cowpock could be excited by insertion of what is esteemed the most efficacious matter, in thirteen persons who had undergone the cowpock about three or four years before, nor in two who had been vaccinated only a few weeks previously.

“ 2. A local affection, viz. a pimple which enlarged into an irregular-figured pock, or at least a larger pimple, was excited by the punctures with variolous matter in the arms of seven patients ; and in the same patients, the punctures with vaccine matter excited nearly similar pimples.



“3. A local affection which was at first a pimple, but became an irregular-figured pock, was excited in the arms of three patients by the insertion of variolous matter ; and by the insertions of vaccine matter in the same patients, only very small pimples were produced.

“ In one patient, a local affection was excited in one arm by vaccine matter, but not in the other by variolous.

“ 4. In three patients, no local affection at all was produced, or at least red marks only of two or three day’s duration.

“ 5. Neither constitutional disorder, nor affection of the axillary glands, was produced in any of the subjects of trial, excepting one on the seventh and eighth day.

“ This patient on the eleventh day had three pocks from the variolous matter, not unlike inoculated smallpox, in a semi-purulent state, attended by the characteristic areola ; while on the left arm, from the vaccine matter, were only red marks.

“ 6. One patient, inoculated by three punctures with variolous matter only, had three irregular-figured pocks excited, two of which afforded rather permanent scabs.

“ 7. One patient, who had undergone the natural smallpox, had three pimples excited in each arm, all much alike, by the cowpock and variolous matter.

“ 8. In some cases the local affection was more considerable from the variolous than from the vaccine matter, but in none more from the vaccine than the variolous.

“ 9. The local affection, both from the variolous matter and vaccine, sometimes resembles the cowpock, but never the regular variolous pock of the inoculated part.”

[Med. and Chir. Review, vol. 14. p. lxxxii.]

Opinions similar to those here maintained were long since advanced by Mr. Ring, and admitted by many vaccinists in England. The experiments related ought at least to add to the inducement to revaccinate all those who underwent the cowpock in 1800, 1801, and 1802. It would indeed be proper to extend the offer of revaccination, or of testing with vaccine matter, to all whom we have heretofore vaccinated ; and to state to those

who may hereafter be vaccinated the advantages of this test. In employing this test we ought to introduce the vaccine matter into at least four different places.

The committee are aware that few persons in this country are prepared to hear from this society that the vaccine disease is not in all cases a perfect security against the smallpox ; and they presume it will be feared by some that suggestions of this sort, which must accompany any remedy that shall be proposed, may deter our fellow-citizens from submitting to vaccination, and thus deprive us of the security, which this practice will undoubtedly afford. But the committee feel assured that this society cannot desire to make any statement on this subject, which is not perfectly accordant with truth ; and that the friends of vaccination can have no interest other than that of diffusing a most important blessing under such precautions, that it shall not be alloyed by any future disappointments. To the committee it appears that the advantages of vaccination are, under the circumstances they state, sufficiently decided to justify the expectations of any reasonable inquirer. The cowpock does not produce any sufferings in the subject of it, which are worthy consideration, and it does not in any case put life at risk. The precautions which are proposed go only to obviate an evil, which would not occur once in a thousand cases.

As respects the practice of vaccination in this commonwealth the committee regret to state that it has been much less extensive, than the welfare of the community requires. Although the laws and customs long since established ordinarily prevent the prevalence of smallpox among us,—from which the community have and do derive most abundant advantages,—yet it has been found necessary at times to permit this disease to be introduced into our large towns ; that is, when its inevitable occurrence has occasioned many individuals to be exposed to its contagion. As the cowpock cannot be communicated except by inoculation, there is no inconvenience to the community in the practice of that inoculation. Could we destroy in every individual the susceptibility of smallpox by this benign remedy, we

should prevent even the occasional prevalence of that disease among us—an event which can never take place without a most injurious interruption of business, great expense, trouble and anxiety to every family concerned in it ; and, what has usually happened on these occasions, a most lamentable proportion of deaths among those who undergo the disease.\*

From the statements and opinions contained in the foregoing report the committee are induced to propose the following resolutions, as declaratory of the sentiments of this society ; viz.

First—That in the opinion of this society persons who undergo the cowpock are thereby rendered as incapable of being affected by the virus of smallpox, as if they had undergone the latter disease.

Second—That it is to be feared that in the early and even in some of the late practice of inoculating for the cowpock, the disease may not have been produced in the most perfect manner, and particularly in cases, where the inoculators have not been well instructed in this practice, nor been accustomed to observe the appearances of cutaneous diseases.

Third—That the most perfect and absolute security is to be derived from subsequent inoculation ; and in all cases in which the operation was performed before inoculators had sufficient experience on this subject, as in the years 1800, 1801 and 1802, it is indispensably necessary to ascertain the security by this test.

Fourth—That it be and it hereby is recommended by this Society, that all persons who have been vaccinated, especially at the period alluded to above, call on those who inoculated them to perform a second inoculation ; for which service the fellows of this society will not charge any additional fee.

\* In 1792, when inoculation for smallpox was permitted in Boston, the deaths were more than two in a hundred of the number inoculated. This great mortality is easily explained, when it is remembered that half a town were inoculated at once without regard to age or circumstances of health, and that many of them had not any such advantages as are to be desired in respect to situation and attendance.

If the foregoing resolutions be adopted by the Society, the Committee recommend that the Recording Secretary be directed to publish the same in four newspapers in the town of Boston.

All which is respectfully submitted,

Signed,

JOHN WARREN,  
A. DEXTER,  
JAMES JACKSON,  
JOHN C. WARREN, } Committee.

*AT the annual meeting of the MASSACHUSETTS MEDICAL SOCIETY, held June 1, 1808, the foregoing report was read: and after some observations it was voted unanimously that the said report should be accepted, and that the resolutions therein proposed should be adopted.*

JOHN C. WARREN, Recording Secretary.



# ERRATA—No. II. Part II.

Page 7 line	8	for aquæ	read aqua
10	13	aquæ	aqua
19	20	rub.	peruv.
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### ADVERTISEMENT.

THE MEDICAL PAPERS, already published by this Society, may now be conveniently bound in one volume, to be entitled "MEDICAL COMMUNICATIONS OF THE MASSACHUSETTS MEDICAL SOCIETY, Vol. I."; and which may be conveniently lettered "*Mass. Med. Communications.*" The publications of the Society will in future be more frequent than they have been, and more regard will be had to method. With this are issued one title page for the volume, and a title page to each part of No. 2; also tables of contents to each of those parts; which tables may be placed, when bound, immediately after the table of contents of No. 1. with which it will be perceived that the paging accords.









